

# NEW JERSEY TURNPIKE AUTHORITY

## Installation Cost for 8 GHz Digital Microwave System

<u>Equipment</u>	<u>SITE</u>	<u>Deepwater</u>	<u>Swedesboro</u>	<u>Woodbury</u>	<u>Moorestown</u>	<u>Florence</u>	<u>West Trenton</u>	<u>Bordentown</u>	<u>Hightstown</u>	<u>Cri</u>
Radio Equip	\$	94,969	\$ 189,938	\$ 189,938	\$ 189,938	\$ 94,969	\$ 94,969	\$ 379,876	\$ 284,907	\$
Multiplex		57,915	57,915	57,915	57,915	57,915	57,915	57,915	57,915	
Antennas		13,497	26,994	26,994	26,994	13,497	13,497	53,987	40,491	
DC Power & Distribution		10,570	10,570	10,570	10,570	10,570	10,570	10,570	10,570	
Tower Upgrades			111,480			91,460	111,480			
Tower Replacement					317,436					
Tower Analysis			7,879		7,879	7,879	7,879			
Electrical Site Work		70,323		33,086				45,396	67,165	
Radio Hut & Site Work		5,071	11,306	75,900		11,306	11,788	5,071	5,071	
Spare Equipment		14,521	14,521	14,521	14,521	14,521	14,521	14,521	14,521	
Project Mgmt		1,822	9,762	1,822	9,762	9,762	9,762	1,822	1,822	
TOTAL	\$	268,688	\$ 440,365	\$ 410,746	\$ 635,015	\$ 311,879	\$ 332,381	\$ 569,158	\$ 482,462	\$



**MOTOROLA**

**NEW JERSEY TURNPIKE AUTHORITY**

**ATTN: WINSTON CHAFIN**

**SUBJECT: TOWER REPLACEMENT/REINFORCEMENT SOUTH**

**FROM: JACK CURRAN**

<b>TOWER UPGRADES</b>	<b>\$</b>	<b>301,670.00</b>
<b>SWEDESBORO</b>		
<b>WEST TRENTON</b>		
<b>FLORENCE</b>		
<b>DEEPWATER</b>	<b>\$</b>	<b>7,600.00</b>
<b>ANTENNA &amp; TRANSMISSION CABLE</b>		
<b>INSTALLATION</b>		
<b>HIGHT</b>	<b>\$</b>	<b>7,600.00</b>
<b>ANTENNA'S &amp; TRANSMISSION CABLE</b>		
<b>INSTALLATION</b>		
<b>MOORESTOWN TOWER REPLACEMENT</b>	<b>\$</b>	<b>309,496.50</b>
<b>SOIL BORINGS</b>		
<b>FOUNDATION DESIGN</b>		
<b>FOUNDATION CONSTRUCTION</b>		
<b>TOWER STEEL</b>		
<b>TOWER ERECTION</b>		
<b>WAVEGUIDE/HARDWARE</b>		
<b>ANTENNA'S / TRANSMISSION CABLE</b>		
<b>INSTALLATION OF ANTENNA'S &amp; CABLE</b>		
<b>ARCHITECTURAL FEES &amp; PERMITS</b>	<b>\$</b>	<b>11,360.00</b>
<b>PROGRAM MANAGEMENT</b>	<b>\$</b>	<b>20,400.00</b>
<b><u>SOUTH TOTAL</u></b>	<b>\$</b>	<b>658,126.50</b>

**TOWER PRICING INCLUDES:**

**BEACON**  
    **PAINTING**  
    **SAFETY LADDER**  
    **LIGHTNING KIT**  
    **GROUNDING**

**MOTOROLA**

**NEW JERSEY TURNPIKE AUTHORITY  
ATTN: WINSTON CHAFIN  
SUBJECT: TOWER REPLACEMENT/REINFORCEMENT / NORTH  
FROM: JACK CURRAN**

**KEARNY**

**ELECTRICAL SERVICE \$ 178,238.00  
ICE BRIDGE  
SHELTER  
WAVEGUIDE / HARDWARE**

**WOODBIDGE****\$ 54,386.00****ELECTRICAL WORK****BAYONNE TOWER REPLACEMENT****\$ 324,497.00**

**FOUNDATION DESIGN  
FOUNDATION CONSTRUCTION  
TOWER STEEL  
TOWER ERECTION  
ANTENNA'S / TRANSMISSION CABLE  
INSTALLATION OF ANTENNA'S & CABLE**

**ARCHITECTURAL FEES & PERMITS****\$ 17,040.00****PROGRAM MANAGEMENT****\$ 30,600.00****NORTH TOTAL****\$ 604,761.00****TOWER PRICING INCLUDES:**

**BEACON  
PAINTING  
SAFETY LADDER  
LIGHTNING KIT  
GROUNDING**



PURCHASE ORDER  
**NEW JERSEY TURNPIKE AUTHORITY**

P.O. BOX 1121  
NEW BRUNSWICK, NEW JERSEY 08903

No. PO 00000061  
THIS NUMBER MUST APPEAR ON  
INVOICES, PACKAGES, AND BILLS  
LOADING

TO: MOTOROLA C & E INC.

85 HARRISTOWN ROAD  
GLEN ROCK

NJ 07452

SHIP TO: NEW JERSEY TURNPIKE AUTHORITY  
Administration Bldg.  
Rt. 18 & Int. 9  
East Brunswick NJ 08816  
Attn: Winston Chafin  
MTCE CODE

PURCHASE ORDER DATE 01/31/95		DELIVERY REQUIRED 180 DAYS ARO		TERMS NET 30 DAYS		F.O.B. DESTINATION		REQUISITION NO 36200	
REQUISITIONING DEPT. COMMUNICATIONS/OP								PROMISE DEL. DATE 180 DAYS ARO	
ANPIKE NO.	ITEM	QTY	U/M	DESCRIPTION			ACCT. NO.	UNIT PRICE	AMOUNT
	001	1	LT	Turnkey replacement/expansion of Authority's microwave radio relay system, comprised of 12 existing and 4 new stations. The new system shall be characterized by 99.9999% electronic/path reliability, Bell T1 compatability and full simulcast capability.  New, as well as, existing stations shall be fully complimented down to the channel level. All electronic equipment and major electro/mechanical components shall be spared at the 10% or one unit minimum level. Major electronic system spares shall be fully racked up for training purposes.  Furnish and install the following major new equipment components at all locations: -- Redundant 6GHz, DS3, digital radios -- Digital drop/insert (two-way) multiplexors -- Mark (fully-floating) enclosed antennas -- PCP redundant DV battery supplies and distribution -- Internal network support hardware Services to include: -- Project management -- Mobilization/installation -- Training -- Frequency coordination/license application -- Two-year, full coverage on-site warranty (7-day, 24-hours)			92-TSM-7755-0000	*****	479898

PURCHASING DEPT. CODE

TERMS AND CONDITIONS PRINTED ON THE REVERSE S

Do not render an invoice until this order has been completely delivered

Federal excise taxes, and N.J. State Sales and Use Tax, from which the Purchaser is exempt, should not be added to invoice

NEW JERSEY TURNPIKE AUTHORITY

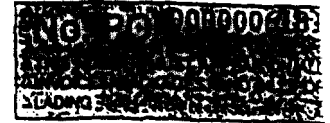
*E. Trause*

ADMINISTRATOR, PURCHASING/OFFICE SERVICE



# PURCHASE ORDER NEW JERSEY TURNPIKE AUTHORITY

P.O. BOX 1121  
NEW BRUNSWICK, NEW JERSEY 08903



MOTOROLA C & E INC.

85 HARRISTOWN ROAD  
GLEN ROCK

NJ 07452

SHIP TO: NEW JERSEY TURNPIKE AUTHORITY  
Administration Bldg.  
Rt. 18 & Int. 9  
East Brunswick NJ 08816  
Attn: Winston Chafin

MITCE CODE

PURCHASE ORDER DATE 01/31/95		DELIVERY REQUIRED 180 DAYS ARO		TERMS NET 30 DAYS		FOR DESTINATION		REQUISITION NO. 36200	
REQUISITIONING DEPT. COMMUNICATIONS/OP								PROMISE DEL. DATE 180 DAYS ARO	
LINE NO.	ITEM	QTY	U/M	DESCRIPTION			ACCT. NO.	UNIT PRICE	AMOUNT
				<p>Except for unavoidable planned outages not exceeding a few hours, at the Authority's convenience, the vendor shall maintain full integrity of the existing system, to the extent of his involvement, during installation and cutover of the replacement system, which shall be phased and seamless throughout.</p> <p>All else as per Motorola's 20 page proposal dated 1/12/95, copy enclosed.</p> <p>STATE CONTRACT NUMBER A64625</p> <p>C/M 12-22-94</p> <p>It is anticipated that costs will not exceed the amount shown on Purchase Order. Any increase of the total amount shall be at the sole risk of the vendor.</p>					
TOTAL AMOUNT									4,798,988.7

PACKING SLIP CODE I JA

TERMS AND CONDITIONS PRINTED ON THE REVERSE SIDE

NEW JERSEY TURNPIKE AUTHORITY

*James J. Chafin*

Excise taxes, and N.J. State Sales and Use Tax, from which the Purchaser is exempt, should not be added to invoice

ADMINISTRATIVE - PURCHASING DEPT. - 100-1000

SECTION VIII

**NEW JERSEY TURNPIKE AUTHORITY**

**MICROWAVE SYSTEM COST SUMMARY**

32 ----- HOT STANDBY DIGITAL RADIOS	<u>\$3,039,001.24</u>
16 ----- DIGITAL MULTIPLEX SYSTEMS	<u>\$926,640.10</u>
16 ----- ANTENNA SYSTEMS	<u>\$431,828.75</u>
16 ----- DC POWER SUPPLY AND DISTRIBUTION	<u>\$169,120.00</u>
1 LOT -- SPARE EQUIPMENT	<u>\$ 232,328.76</u>
-----PROJECT MANAGEMENT	<u>INCLUDED</u>
-----MOBILIZATION / INSTALLATION	<u>INCLUDED</u>
-----TRAINING /LICENSE	<u>INCLUDED</u>
-----TWO YEAR ON-SITE WARRANTY FULL COVERAGE ( 7-DAY , 24 HRS )	<u>INCLUDED</u>
<b>TOTAL TURN-KEY SYSTEM COST</b>	<b><u>\$4,798,988.75</u></b>

SH 1 OF 1		APC	TEA	SEC	KNY	NWK	BAY	WDB	NBK	CBY	HTN	BTW	WTN	FLO	MTN	WBY	SWB	DPW	SP	QUAN
CUSTOMER	NEW JERSEY TURNPIKE AUTHORITY																			
PREPARED BY: JACK CURRAN	DATE: 1/25/95																			
TELEPHONE #609-584-9231																				
MODEL#	DESCRIPTION																			
MWK17TYD2676A	TELESTAR 6 PROTECTED TERMINAL	131	2	2	2	2	3	2	2	1	3	4	1	1	2	2	2	1	2	34
MWP407AH	DS3 PROTECTED INTERFACE	131	2	2	2	2	3	2	2	1	3	4	1	1	2	2	2	1	2	34
MWP422AH	ADAPTIVE TIME DOMAIN EQUALIZER	131													1	1				2
MWP333AN	7.5' RELAY RACK	131	2	2	2	2	3	2	2	1	3	4	1	1	2	2	2	1	2	34
MWP141AM	SERVICE CHANNEL UNIT	131	2	2	2	2	3	2	2	1	3	4	1	1	2	2	2	1	2	34
MWP154AB	ORDERWIRE UNIT W/HANDSET	131	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	18
MWP428AA	STATUS & CONTROL EXTENDER	131	2	2	2	2	3	2	2	1	3	1	1	1	1	1	1	1	2	34
MWP404AH	WAYSIDE T1 UNIT	131																		0
MWIHDSTR1AFTB0	TRIM AUX FUSE/TERM BLOCK PANEL	131	2	2	2	2	3	2	2	1	3	4	1	1	2	2	2	1	2	34
MWM1202A	PROTECTED M13 MULTIPLEXER	131	2	2	2	2	3	2	2	1	3	4	1	1	2	2	2	1	2	34
MWIMLN7118A	FUSE & ALARM PANEL	131	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	17
MWP369AFSP	MOUNT M13 TO RACK	131	2	2	2	2	3	2	2	1	3	4	1	1	2	2	2	1		32
MWP369AGSP	MOUNT FUSE PANEL TO RACK	131	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		16
MWP370AESP	MOUNT LOW SPEED MODULES	131	14	14	14	14	21	14	14	7	12	28	7	7	14	4	14	14	0	224
MWIMLN7113A	4XDS1 LOW SPEED MODULE	131	14	14	14	14	21	14	14	7	12	28	7	7	14	4	14	14	0	224
8918	IMACS/800 UNIVERSAL ENCL	131	1	1	1	2	1	1	6	1	1	2	1	1	1	1	1	1	2	25
8920	8 T1/E1 INTERFACE CARD W/MODEM	131		1		2	1	1	6	1	1	2			1		1		2	19
8926	2 T1 INTERFACE CARD W/MODEM	131	1		1								1	1		1		1	1	7
8902	DC SUPPLY	131	1	1	1	2	1	1	6	1	1	2	1	1	1	1	1	1	2	25
8904	RING GENERATOR	131	1	1	1	2	1	1	6	1	1	2	1	1	1	1	1	1	2	25
8800	CPU CONTROL WITH 2 T1/E1 BUS	131	1		1								1	1		1		1	1	7
8801	CPU CONTROL WITH CROSS CONN	131		1		2	1	1	6	1	1	2			1		1		1	18
8804	CPU CONTROL WITH 4 T1/E1 BUS	131																		0
8010	DUAL T1/E1 LINE INTERFACE	131	1	2	1	4	2	1	16	2	2	4	1	1	2	1	1	1	2	44
811	DSX/CERT PLUG IN MODULE	131	2	4	2	8	4	2	32	4	4	8	2	2	4	2	2	2	4	88
8220	10 PORT RS-232 SUB RATE	131	1	1	1	1	1	1	15	1	1	1	1	1	1	1	1	1	1	31
8118	8 PORT 4-WIRE E&M/TO	131	1	3	1	4	3	1	24	3	3	2	1	1	3	1	1	1	1	54
8124	4 PORT 2-WIRE FXS 900	131	1		1			1					1	1		1	1	1	1	9
8128	8 PORT 2-WIRE FXS 900	131		2		3	1			1	2	1			2				1	13
8134	4 PORT 2-WIRE FXO 900	131	1		1			1					1	1		1	1	1	1	9
8138	8 PORT 2-WIRE FXO 900	131		2		3	1		16										1	23
1207	6'3 TO 4 50 PIN E & M CABLE	131	1	1	1	3	1	1	8	1	1	2	1	1	1	1	1	1		26
1208	6'3 TO 1 50 PIN FXS & FXO	131	1	1	1	2	2	1	24	2	4	4	1	1	4	1	1	1	1	52
1231	25' RJ48M TO RJ48M T1 CABLE	131	1	1	1	2	1	1	6	1	1	2	1	1	1	1	1	1		23
8401	EXTERNAL ALARM	131	1	1	1	1	1	1	6	1	1	2	1	1	1	1	1	1	1	23
	PREMLINK	131							1											1
	SUN WORKSTATION								1											1
MWP333AG	7.5' RELAY RACK	131	1	1	1	2	1	1	3	1	1	1	1	1	1		1	1		18
DS01001120101	12 PORT DSX CROSS CONNECT	131																		0
DS01001320101	32 PORT DSX CROSS CONNECT	131	2	2	2	2	3	2	2	1	2	3	1	1	2	2	2	1		30
SERVICE	MOUNT & WIRE DSX BLOCK	131	2	2	2	2	3	2	2	1	2	3	1	1	2	2	2	1		30
	TELESCAN 3000 OMCMD	131							1											1
	TELESCAN 3000 LMT	131							1											1
	TELESCAN 3000 RIU	131	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	17
	TELESCAN 3000 NIMU	131	2	2	2	2	3	2	2	1	3	4	1	1	2	2	2	1	1	33

			TEA	SEC	KNY	NWK	BAY	WDB	NBK	CBY	HTN	BTW	WTN	FLO	MTN	WBY	SWB	DPW	SP	QUAN
DQP65A96	MARK 8 FOOT ANTENNA	229	2	2	2	2	3	2	2	1	3	4	1	1	2	2	2	1	1	33
DQR96W	MARK 8 FOOT RADOME	229	2	2	2	2	3	2	2	1	3	4	1	1	2	2	2	1		32
DOMMTG	ANTENNA MOUNTING BRACKET	229	2	2	2	2	3	2	2	1	3	4	1	1	2	2	2	1		32
DSEWP6365N	EW63 WAVEGUIDE	229	380	360	353	100	725	425	400	110	620	1140	160	180	500	520	330	260		6563
DS42396A7	WAVEGUIDE HANGER KIT OF 10	229	13	12	12	1	20	14	12	5	20	38	6	6	16	16	11	9		211
TDN6950A	ANGLE ADAPTER	229	13	12	12	1	20	14	12	5	20	38	6	6	16	16	11	9		211
TDN7548A	WAVEGUIDE GROUNDING KIT	229	6	6	6	6	9	6	6	3	9	12	3	3	6	6	3	3		93
DOMDN6826A	WAVEGUIDE CONNECTOR KIT EW63	229	2	2	2	2	3	2	2	1	3	5	1	1	4	2	3	1		36
DSMT300201	AUTOMATIC DEHYDRATOR	229	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	17
DSAE01KC0331	INSTALLATION KIT	229	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		16
DS66M1KIT	66 BLOCK KIT	229																		0
DS25PP30	25' CONNECTORIZED CABLES	229																		0
MDN7152A	REDUNDANT 48VDC-25A BAT CHG	229	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		16
MDN7214A	48VDC-160A BATTERY SYSTEM	207	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		16
DSUS16524	BATTERY RACK	229	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		16





PURCHASE ORDER  
NEW JERSEY TURNPIKE AUTHORITY

P.O. BOX 1121  
NEW BRUNSWICK, NEW JERSEY 08903

No. PO 000000

THIS NUMBER MUST APPEAR  
ON INVOICES, PACKAGES, AND  
LOADING

TO: MOTOROLA C & E INC.

67 BENSON AVENUE  
TRENTON

NJ 08610

SHIP TO: NEW JERSEY TURNPIKE AUTHORITY

Administration Bldg.

Rt. 18 & Int. 9

East Brunswick NJ

0881

Attn: Winston Charin

MTCE CODE

PURCHASE ORDER DATE 05/19/95		DELIVERY REQUIRED AS REQUIRED		TERMS NET 30 DAYS		F.O.B. DESTINATION		REQUISITION NO 35914	
REQUISITIONING DEPT. COMM/OF								PROMISE DEL. DATE AS REQUIRED	
TURNPIKE I NO.	ITEM	QTY	U/M	DESCRIPTION			ACCT. NO.	UNIT PRICE	AM.
	001	1	LS	Provide tower analysis and reports for structural strengthening to insure CWB, MTN, WTN, FLO and KRY radio tower meet ANSI/EIA/TIA-222-E specifications.			92-TSM-7755-0000	39,395.0000	39
	002	1	LS	Site work, providing all labor and materials to install electrical, mechanical, ice bridge, permits, DCA fees and inspections for BTN, HTN, WBY, DPW, WTN, CWB and FLO communication shelters.			92-TSM-7755-0000	283400.0000	283
				N.J. STATE CONTRACT #A64625					
				It is anticipated that cost will not exceed the amount shown on Purchase Order. Any increase of the total amount shall be at the sole risk of the vendor.					
				001 05-10-95					
							TOTAL AMOUNT		322

PURCHASING DEPT. CODE

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TERMS AND CONDITIONS PRINTED ON THE REVERSE

NEW JERSEY TURNPIKE AUTHORITY

*William J. Lawrence*  
ADMINISTRATOR PURCHASING OFFICE SERVICE

Excise taxes, and N.J. State Sales and Use Tax, from which the Purchaser is exempt, should not be added to invoice

DEPARTMENT HEAD

New Jersey Turnpike Authority  
P.O. Box 1121  
Attn: Winston Chafin  
New Brunswick, New Jersey, 08903

May 8, 1995

**Subject: Pricing for additional work requested by NJTP**

**Dear Mr. Chafin:**

**The following is the price Breakdown for the additional civil type work required by NJTP to complete the South site portion of the Microwave project. It does not include any pricing for tower strengthening if required after analysis is performed**

**Tower Analysis and Reports:**

Swedesboro	\$7029.00
Moorestown	\$7029.00
West Trenton	\$7029.00
Florence	\$7029.00
Kearney	\$7029.00

Project Management	\$4250.00
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Total	\$39,395.00
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**Pricing includes:**

1. Field tower inspection of the existing towers and antennas to confirm the condition of existing steel, and to document the material makeup, and design of each tower.
2. Perform a structural analysis of each tower to determine compliance with ANSI/EIA/TIA-222-E.
3. Produce two sealed structural analysis reports per tower with complete computer calculation output pages.
4. Produce three additional sealed structural analysis reports without the computer calculation output pages.
5. Provide quotation to strengthen tower structures to meet NJTP intended antenna load.

**Civil Work**

Tower	\$48,798
Removal of old tower	\$9,000
Equipment Shelter	\$24,770
Site Development	\$24,750
Labor	\$8,000
Licensing	\$5,000
Total	<u>\$225,318</u>

We feel that we could accomplish this transition by December of 1996. I understand that you favor the frequency be vacated by May 31, 1996, and we could perform some temporary work with lease circuits etc to accomplish, but we would incur an additional cost of \$104,000. This includes extra labor to install temporary facilities and leased circuit costs for the months of June 1996 through December 1996.

If you have any questions, please feel free to call me at 913-575-1628. We look forward to hearing from you.

Sincerely,



Ray Hildebrand

attachments

COPY

## MICROWAVE SITE PROFILES

### EVANS EC:

This site is an operating energy center. The antenna is mounted on top of the elevator head house, and the equipment is in a shared equipment room. The room is full, and other arrangements will have to be made, including battery supply HVAC etc.

### WICHITA SCC:

This site is the System Control Center and the hub of the southern region telecommunications. There are about 200 channels terminated here from the East (Wichita SC) and 36 from the West (Evans EC). These two systems are at present back to back on a channel level. At this location we can make space for new equipment and antennas during the transition time. The major difficulty will be coax penetrations through the roof. The tower structure is on the roof. Transmission line lengths are 150'.

### WICHITA SC:

This site is our service center, and will be one of the more difficult sites to transition. The tower is a 250' self supporting, with a 10'x16' equipment shelter under it. The tower is loaded to capacity, and the shelter is completely full. This site will not support another set of rf equipment for the transition, either on the tower or in the Building. There is enough land available at this location to construct another tower and building, but will have to be another self support tower. The new site will have to be designed to handle the complete existing equipment load. The old site will then be removed to return the land back to the service center for their use. There are about 60 channels terminated at this facility. I would spec a 300' tower with the following loading: 4 microwave antennas at the top, allowance for diversity dishes 40' below the top, 4 DB609 or equivalent 900 MHz antennas at the top, 2 DB609's at 250' and 2 DB609's at 200'.

### MIDIAN:

This substation site has a 250' guyed tower and structure, that is not sufficient to handle the load of additional rf equipment or antennas. A new site will have to be constructed, and land availability is still under investigation. We have about 46 channels terminated here. Any new site construction will have to include a phone demark facility, since we lease toll circuits out of this facility.

### BEAUMONT:

This station has recently been upgraded with a new tower and structure to facilitate addition of trunked radio equipment. The facility will easily handle a transition. There are now no channels here now, but 12 planned to handle 2 way radio control. The channels would already exist if not for the uncertainty of the PCS transition. We instead, incurred additional expense to provide lease circuit facilities to support the trunked radio requirements.

Pricing by Site to perform civil work, i.e. electrical, mechanical, ice shielding etc.  
Pricing also includes permit applications, fees, and inspections.

1. Bordentown	\$45,395.60
2. Highstown	\$67,166.00
3. Woodbury	\$33,086.00
4. Deepwater	\$70,322.60
5. West Trenton	\$ 6,716.60
6. Swedesboro	\$ 6,235.00
7. Florence	\$ 6,235.00

Total \$235,156.80

Approximately 200ft of Paramount Ice bridging at Sites in South system

\$35,500.00

Program Management \$12,750.00

Total Recap	Tower Analysis & PM	\$39,395.00
	Civil Work	\$235,156.00
	Ice Shield	\$35,500.00
	Project Management	\$12,750.00
Grand Total		\$322,801.00

Pricing is per New Jersey State Contract A64625

Terms: Net 30 days; services as rendered.

Regards



Peter J. Curran  
Motorola Inc.  
Account Executive

# Microwave Relocation - Bad Actor Form

2/21/96

Incumbent Name: **Detroit Edison**

Market / MTA: **Detroit**

Market freq. block: **B**

Number of paths required for initial system: **2**  
 Estimated comparable cost per path: **\$175,000**  
 Total estimated comparable cost: **\$350,000**

Number of paths requested by incumbent for relo: **2**  
 A paths:  
 B paths: **2**  
 C - F paths:  
 Non PCS paths:  
 Per path cost requested by the incumbent: **\$475,200**  
 Additional payments requested by the incumbent: **\$0**  
 Total requested relocation cost by the incumbent: **\$950,400**

## Chain of events:

<u>Date</u>	<u>Action</u>
10/15/95	Detroit Edison refuses to work with STV third party representative. Indicates desire to work directly with STV.
11/10/95	Detroit E&O Director contacts Detroit Edison directly on matters other than relocation to move matters along. STV corporate also contacts Detroit Edison to reiterate their desire to work to an agreement. (Date Approximate.)
12/15/95	Detroit Edison suggests a meeting with both the Corporate and local offices of STV for the date of January 10, 1996.
1/10/96	STV meets with Detroit Edison at their offices in Detroit. At the meeting, STV is presented their price for removing the two current links in question. STV attempts to question the figure, but is told, "not to dick around with their numbers" by Gary Mittleman, AVP of Business Development.
2/7/96	Detroit Edison provides a breakdown of cost figures for relocation.

Additional Comments:

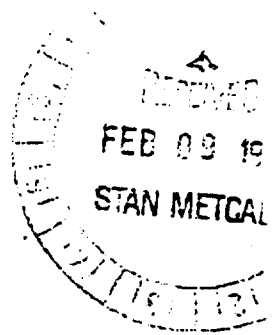
**SPRINT PCS SPECTRUM RELINQUISHMENT COSTS**

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006											
<b><u>SPRINT SPECTRUM</u></b>																						
<b>INSTALLED EQUIP. COST</b>																						
Thumb	\$	42.0																				
Fermi 2	\$	272.8																				
<u>Overheads @ 21.6%</u>	\$	83.1																				
SUBTOTAL	\$	397.9																				
<b>UNDEPRECIATED VALUE</b>																						
Thumb	\$	88.0																				
<u>Fermi 2</u>	\$	163.2																				
SUBTOTAL	\$	251.2																				
<b>DISMANTLING COSTS</b>																						
Thumb	\$	10.0																				
Fermi 2	\$	5.0																				
<u>Overheads @ 156.4%</u>	\$	23.5																				
SUBTOTAL	\$	38.5																				
<b>MISC. DE SALARIES</b>																						
<u>Overheads @ 156.4%</u>	\$	43.8																				
SUBTOTAL	\$	71.8																				
<b>RECURRING LEASE COSTS</b>																						
Thumb	\$	12.6	\$	14.7	\$	14.7	\$	14.7	\$	14.7	\$	14.7	\$	14.7	\$	14.7	\$	14.7	\$	14.7	\$	14.7
Fermi 2																						
NPV of LEASE COSTS	\$	191.1																				
<b>TOTAL NPV</b>																						
COST PER LINK	\$	475.2																				



2000 Second Avenue  
Detroit, Michigan 48226  
(313) 237-8000

February 7, 1996



Mr. Dave McWherter  
Director - Engineering & Operations  
Sprint Telecom Venture  
200 Galleria Office Centre  
Suite 111  
Southfield, MI 48034

Dear Dave,

I enjoyed our discussion on January 11, 1996 concerning relocation and co-location matters related to the deployment of a PCS network. At that meeting we agreed to provide you with further documentation regarding the relocation costs that we submitted to you.

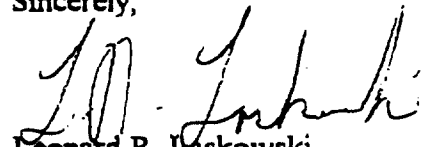
Enclosed with this letter (Attachments 1-2) you will find a description of equipment that is currently being used on each of the two proposed microwave replacement paths. Included on those same exhibits are calculations for the undepreciated value of the equipment. You will note that the figures are slightly different than submitted to you earlier. This is due to further analysis and review.

Also enclosed is a more detailed description and cost (Attachment 3) of the specific equipment that Edison intends to use to replace the existing Fermi 2 microwave link. When adding up these revised figures, you will notice that the total cost (Attachment 4) is slightly higher than originally proposed (Attachment 5).

In the interest of expediting our negotiations, we are willing to abide by the original offer submitted if we can conclude negotiations within a reasonable period of time.

I look forward to hearing from you and please let me know if you need additional information or explanation regarding the attachments.

Sincerely,

  
Leonard R. Laskowski  
Director-Business Development

LRL:cb

Attachments  
WP1196-023.doc

cc: D. Brett  
✓ S. Metcalf  
G. Mittleman



<b>B1</b>					
<b>Thumb Division Headquarters Microwave System</b>					
	<b>Existing</b>				
<b>Item</b>	<b>Equipment Description</b>	<b>Model #</b>	<b>Quan</b>	<b>Unit Cost</b>	<b>Total Cost</b>
1	Frequency Search/Licensing		1	\$ 1,100	\$ 1,100
2	Motorola Starpoint 2000 HTSB Terminal	K88PB01P	2	\$ 17,321	\$ 34,642
3	Andrew 6' Dish and Radome		2	\$ 2,035	\$ 4,070
4	Antenna feedline, connectors, clamps, etc.		1	\$ 1,115	\$ 1,115
5	Exide 210 AH Battery System	EMF 210	1	\$ 1,800	\$ 1,800
6	Quindar Alarm Equipment		1	\$ 522	\$ 522
7	Electrical Equipment; Square D		1	\$ 476	\$ 476
9	C&D Battery Charger	ART24AC2	2	\$ 1,200	\$ 2,400
10	Motorola Starplex Mux Assembly		1	\$ 88,487	\$ 88,487
11	Core drilling for roof to mount tower		1	\$ 2,500	\$ 2,500
12	Rohn 20' tower section		1	\$ 2,000	\$ 2,000
13	Construction labor and Pre-Fab Shop Labor		1	\$ 7,500	\$ 7,500
	<b>Total System Cost</b>				<b>\$ 146,612</b>
	<b>Residual Value</b>		<b>7 Years</b>		<b>\$ 108,434</b>

<b>B2</b>					
	<b>Fermi 2 to NOC Microwave System- Existing</b>				
<b>Item</b>		<b>Model</b>		<b>Unit</b>	<b>Total</b>
<b>No.</b>	<b>Equipment Description</b>	<b>Number</b>	<b>Quant.</b>	<b>Cost</b>	<b>Cost</b>
1	Frequency Search & Licensing		1	\$ 1,500	\$ 1,500
2	Motorola MR200 HTSB Terminal	K36HBF2400	2	\$ 16,778	\$ 33,556
3	Andrew 6 ft. Antenna, Radome, & Mount	P6F-18C	2	\$ 1,497	\$ 2,994
4	Antenna feedline, connectors, clamps etc.	LDF-5P-50	1	\$ 2,002	\$ 2,002
5	Spare Microwave Equipment- Motorola	Misc.	1	\$ 1,600	\$ 1,600
6	Exide 275 AH Battery System	12EU5	1	\$ 1,322	\$ 1,322
7	Exide 360 AH Battery System	12EU7	1	\$ 1,617	\$ 1,617
8	Quindar Alarm Equipment		2	\$ 522	\$ 1,044
9	Electrical Equipment; Square D		1	\$ 1,100	\$ 1,100
10	C&D Battery Chargers	ARR24A/C75	2	\$ 1,215	\$ 2,430
11	Motorola Starplex MUX Assem. Common Equip.		1	\$ 12,646	\$ 12,646
12	Motorola Starplex MUX 2W/4W E&M.	M1100	110	\$ 672	\$ 73,920
13	Motorola Starplex MUX FXS	M1106	68	\$ 808	\$ 54,944
14	Motorola Starplex MUX FXO	M1108	68	\$ 808	\$ 54,944
15	Engineering Design & Document		1	\$ 18,200	\$ 18,200
16	Construction Labor & Misc. Materials		1	\$ 37,200	\$ 37,200
17	Communication Labor		1	\$ 4,800	\$ 4,800
18	Pre-Fab Shop Labor & material		1	\$ 13,400	\$ 13,400
	Total System Cost				\$ 319,219
	Residual Value	13	Years		\$ 164,845

<b>B2</b>					
	<b>Fermi 2 to NOC Microwave System Proposed</b>				
<b>Item</b>		<b>Model</b>		<b>Unit</b>	<b>Total</b>
<b>No.</b>	<b>Equipment Description</b>	<b>Number</b>	<b>uan</b>	<b>Cost</b>	<b>Cost</b>
1	H/F 18 GHz HTSB Terminal DS3	DVM-18	2	\$ 49,567	\$ 99,134
2	Telco Channel Bank		14	\$ 7,528	\$ 105,398
3	Andrew Antennas, Radome		2	\$ 3,200	\$ 6,400
4	Andrew Feedline and hardware		2	\$ 2,100	\$ 4,200
5	Antenna Mounting Fabrication		2	\$ 5,000	\$ 10,000
6	C&D DC power bay	HRT24AC100E	1	\$ 7,866	\$ 7,866
7	Battery System -48 VDC; 600AH	DC-75-17	2	\$ 7,378	\$ 14,756
8	System spares, test cables, and adapters		1	\$ 22,060	\$ 22,060
9	Licensing and Frequency Search		2	\$ 1,250	\$ 2,500
10	Racks, Support Hrdwr., Cabling		2	\$ 1,375	\$ 2,750
11	Engineering, Construction, Tech Labor		1	\$ 10,000	\$ 10,000
					\$ -
	<b>Total System Cost</b>				<b>\$ 285,064</b>
	<b>Interim Solution</b>				<b>\$ -</b>
	<b>Grand Total:</b>				<b>\$ 285,064</b>

## SPRINT PCS SPECTRUM RELINQUISHMENT COSTS-REVISED VERSION

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006											
<b><u>SPRINT SPECTRUM</u></b>																						
<b>INSTALLED EQUIP. COST</b>																						
Thumb	\$	42.0																				
Fermi 2	\$	285.1																				
<u>Overheads @ 21.6%</u>	\$	86.4																				
SUBTOTAL	\$	413.5																				
<b>UNDEPRECIATED VALUE</b>																						
Thumb	\$	108.4																				
<u>Fermi 2</u>	\$	164.8																				
SUBTOTAL	\$	273.2																				
<b>DISMANTLING COSTS</b>																						
Thumb	\$	10.0																				
Fermi 2	\$	5.0																				
<u>Overheads @ 156.4%</u>	\$	23.5																				
SUBTOTAL	\$	38.5																				
<b>MISC. DE SALARIES</b>																						
	\$	28.0																				
<u>Overheads @ 156.4%</u>	\$	43.8																				
SUBTOTAL	\$	71.8																				
<b>RECURRING LEASE COSTS</b>																						
Thumb	\$	12.6	\$	14.7	\$	14.7	\$	14.7	\$	14.7	\$	14.7	\$	14.7	\$	14.7	\$	14.7	\$	14.7	\$	14.7
Fermi 2																						
<b>NPV of LEASE COSTS</b>																						
	\$	191.1																				
<b>TOTAL NPV</b>																						
	\$	988.0																				

**SPRINT PCS SPECTRUM RELINQUISHMENT COSTS-ORIGINAL VERSION**

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006											
<b><u>SPRINT SPECTRUM</u></b>																						
<b>INSTALLED EQUIP. COST</b>																						
Thumb	\$	42.0																				
Fermi 2	\$	272.8																				
<u>Overheads @ 21.6%</u>	\$	83.1																				
SUBTOTAL	\$	397.9																				
<b>UNDEPRECIATED VALUE</b>																						
Thumb	\$	88.0																				
<u>Fermi 2</u>	\$	163.2																				
SUBTOTAL	\$	251.2																				
<b>DISMANTLING COSTS</b>																						
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<u>Overheads @ 156.4%</u>	\$	23.5																				
SUBTOTAL	\$	38.5																				
<b>MISC. DE SALARIES</b>																						
<u>Overheads @ 156.4%</u>	\$	43.8																				
SUBTOTAL	\$	71.8																				
<b>RECURRING LEASE COSTS</b>																						
Thumb	\$	12.6	\$	14.7	\$	14.7	\$	14.7	\$	14.7	\$	14.7	\$	14.7	\$	14.7	\$	14.7	\$	14.7	\$	14.7
Fermi 2																						
<b>NPV of LEASE COSTS</b>																						
	\$	191.1																				
<b>TOTAL NPV</b>																						
	\$	950.5																				

# Microwave Relocation - Bad Actor Form

2/21/96

Incumbent Name: **Suffolk County Police**  
**Suffolk County Water Authority**

Market / MTA: New York

Market freq. block: B

Number of paths required for initial system: 2  
 Estimated comparable cost per path: \$210,000  
 Total estimated comparable cost: \$420,000

Number of paths requested by incumbent for relo: 13  
 A paths: 2  
 B paths: 2  
 C - F paths: 2  
 Non PCS paths: 7  
 Per path cost requested by the incumbent: \$4,000,000 for 13 Paths  
 Additional payments requested by the incumbent: \$18,000,000  
 Total requested relocation cost by the incumbent: \$22,000,000

## Chain of events:

Date	Action
9/20/95	Initial meeting with Suffolk County. The County asked for systemic relocation of all paths and funds to build additional sites. Also, requested digital upgrade and cash payments beyond the replacement.
10/5/95	The County sent CSM a list of tower locations for the county's information manage services.
10/10/95	The County sent a fax to CSM that stated: " in return for the 2 GHz frequencies, Suffolk county requests a total digital microwave upgrade which includes all enhancement with all County Management Information Services. An additional revenue of \$18,000,000 must be included to consummate negotiations in a timely manor!!!
10/27/95	The county sent a fax to CSM detailing their relocation proposal.
10/30/96	Meeting with Suffolk County. The County again asked for systemic relocation of all paths and funds to build additional sites. Also requested digital upgrade and cash payments beyond the replacement. The meeting revolved around discussion of the County's proposal. The County asked for a proposal from the PCS Licences.
11/16/95	Suffolk County was given an initial term sheet with three proposals. CSM is representing STV and Omnipoint for Microwave relocation. STV and Omnipoint have two paths each. Proposal 1- Analog replacement of the STV and Omnipoint paths with 600 channel radios. Proposal 2- Systemic analog replacement of the incumbents six 1.9 paths. 2-STV 2-Omnipoint 2-C block Proposal 3- Digital replacement of the Omnipoint and STV paths with 16DS-1 radios.
11/28/95	Relocation by April 15, 1996. The County found the term sheet unacceptable.
2/21/96	Continued contact with the Suffolk County Police has been unsuccessful in reducing their relocation expectation.

**Negotiations Summary for  
SUFFOLK COUNTY POLICE**

**Client:** STV  
**Negotiator:** Katie Drucker  
**Meeting Date:** September 20, 1995  
**Meeting Attendees:** Vincent Stile (Communications System Director)  
Gregory Curto (Communications Manager)  
Joseph Chiro (Chief Technician)  
Bill Gardner (System Operation Technician)  
Bob Donnelly (Communications Manager for County)  
Spike Schultheis (UTC Consultant, Mission Communications Group)

**System Overview:**

System is 13 paths total (incumbent says there are 21 paths total). Seven (15) paths are 2.1. Six paths are 2 GHz. Omnipoint is interested in three of these paths. STV is interested in one of these paths:

Site 1	Call sign	Freq.	Site 2	Call sign	Freq.	PCS interest
Hauppauge	WNTD938	1935.0000	3rd Precinct	WEG578	1855.0000	Omnipoint
Coram Hill	WEG581	1875.0000	PDHQ Yaphan	WEG582	1935.0000	Omnipoint
Majors Path	WEG576	1945.0000	Suffolk Park	WEG577	1865.0000	Omnipoint
Coram Hill	WEG581	1875.0000	Hauppauge	WNTD938	1955.0000	STV

The incumbent has contracted with Spike Schultheis who is a UTC consultant. I have been involved with Mr. Schultheis on two other negotiations and in each instance he seems to lead the movement towards exorbitant premiums. In this instance, the Suffolk County Police are seeking a systemic relocation that includes the 2.1 Ghz paths as well as funds for additional paths they would like to build to currently unserved sites. They are insisting upon an upgrade from analog equipment that is over 15 years old to a digital DS-3 system, and a cash payment above and beyond the replacement system.

The suggested mechanism (proposed by Mr. Schultheis) is to offer co-location on Suffolk County Towers to any PCS licensee in exchange for what they are asking. There were some hostile people at the table who said that "to discuss an analog replacement and nothing else was an absolute waste of [their] time." I balked at what they were asking for and suggested that with the amounts they were seeking it was cheaper to engineer around their system. Additionally, I suggested in so many words that it was not beyond Omnipoint or Sprint to take cases that they believed were cases of price gouging to the FCC for review. I stressed the issues of interference and stated that my clients are not in any way responsible for the relocation of 2.1 paths or even 1.9 Ghz paths for which there is no interference.

With respect to the cash payment, the incumbent is waiting for an analysis from the UTC that will be ready by the end of next week that details the "value of the spectrum" and what they will seek as a cash payment.

**Issues to address:**

- In order to move forward with this incumbent, the PCS licensees must look at relocating the C block paths of which there are two. These paths are located between the interference paths and are all part of the backbone of the system.
- Omnipoint and Sprint should address whether or not they would like to co-locate on any of Suffolk County's towers. The County owns all of their towers and they are all less than 10 years old. They are designed to hold three times the amount of equipment that is currently on the towers, and thus could easily hold any PCS equipment.

**Recommendation:**

I carry the message back to the incumbent that my clients are not interested in relocating anything else but the 2 GHz paths. I stress that my clients may be interested in locating on the towers, but these are to be separate discussions and the means by which Suffolk County Police can find additional revenue for the relocation of their 2.1 paths. To show a level of compromise, I would suggest that we address the C block paths, but if they do not make great concessions and move off of their position, then this becomes a case to take to the FCC for price gouging, or we let them sit. They did indicate that they want to make this happen and move forward. I will also try and get their starting position in writing from them so that if we need to go to the FCC, we have some proof.

**Next Steps:**

- Katie Drucker to discuss with PCS licensees the issues regarding site acquisition and the C block paths.
- Katie Drucker will send the incumbent any current information on the C block auctions.
- The incumbent will send me a detailed map of their system that includes all pertinent information for site co-location.
- The incumbent will send me a pricing proposal as presented by the UTC.



COUNTY OF SUFFOLK



ROBERT J. GAFFNEY  
COUNTY EXECUTIVE

PETER F. COSGROVE  
POLICE COMMISSIONER

POLICE DEPARTMENT

10/05/95

Ms. Kathryn E. Drucker  
Negotiations Manager  
Suite 800  
8300 Boone Blvd.  
Vienna, VA 22182

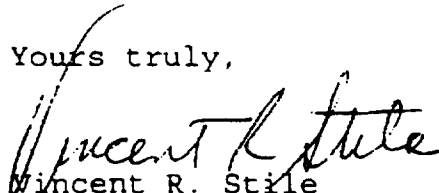
Re: Suffolk County's 2 GHz Spectrum

Dear Ms. Drucker:

The enclosed information is what we had promised to send you regarding Suffolk County's Police Microwave Network. Also included are locations that County Management Information Services has depicted by locations that are to be connected to the microwave network.

If you require any further information regarding the microwave network, please call Mr. Joseph Chiro or myself at (516) 852-6434.

Yours truly,

  
Vincent R. Stile  
Police Communications  
Systems Director

VRS:ec  
encs.